

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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MONTIQUE BOYKIN,

Plaintiff,

12-cv-7428 (NSR) (JCM)
OPINION & ORDER

-against-

WESTERN EXPRESS, INC. and "JOHN DOE,"

Defendants.

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NELSON S. ROMÁN, United States District Judge

This action arises out of an automobile accident involving Plaintiff's vehicle and a tractor-trailer owned by Defendant Western Express, Inc. ("Defendant"). As a result of the accident, Plaintiff claims to have suffered spinal and shoulder injuries requiring surgeries in September 2012 and April 2013. Defendant retained a biomechanical engineer, Douglas R. Morr, P.E., to perform an accident reconstruction and biomechanical analysis. (See Bauer Decl., Ex. E, ECF No. 32-5 [hereinafter Morr Report].) In his report, Mr. Morr opined that the forces that Plaintiff experienced during the collision were "not consistent with causing injury [sic]."
(*Id.* at 1, 12.) Plaintiff retained Dr. Michael D. Freeman to rebut Mr. Morr's opinions. (See Bauer Decl., Ex. H, ECF No. 32-8 [hereinafter Freeman Report].) Defendant now moves *in limine* to bar Dr. Freeman's testimony under Rule 702 of the Federal Rules of Evidence and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). For the following reasons, the motion is DENIED.

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BACKGROUND

Plaintiff's vehicle and Defendant's tractor-trailer were traveling on I-84 East on the morning of February 1, 2011 on a snowy but plowed stretch of highway. (Morr Report at 4; Freeman Report at 2-3.) The tractor-trailer veered from the left lane into Plaintiff's lane and impacted her vehicle, causing it to rotate. (Morr Report at 4; Freeman Report at 5.) While yawing across the highway, Plaintiff's vehicle struck the tractor-trailer one or more additional times, and ultimately came to rest in the snowbank on the side of the highway. (Morr Report at 4; Freeman Report at 2, 5-6.)

Defendant's expert, Mr. Morr, issued a report dated August 26, 2013, reflecting the results of his accident reconstruction and biomechanical analysis. An accident reconstruction considers the accident's *ex post* evidence—vehicle damage, skid marks, testimony—to estimate to the extent possible a vehicle's movements during an accident, including the associated forces and accelerations. *Cabassa-Rivera v. Mitsubishi Motors Corp.*, Civil No. 05-1217(JAF), 2006 WL 6870560, at *6 (D.P.R. May 2, 2006). A biomechanical analysis estimates to the extent possible an occupant's movements during an accident—including the forces and accelerations exposed to the occupant's various body parts—and identifies the mechanism for injury, if any. *Id.* at *12. (Morr Report at 9-11.)

Mr. Morr's accident reconstruction found that the greatest impact forces occurred during the initial impact between the tractor-trailer and Plaintiff's vehicle. (Morr Report at 9.) Mr. Morr estimated that the initial impact resulted in forward longitudinal¹ acceleration of

¹ There are two components to an assessment of the total acceleration resulting from an impact: longitudinal (i.e., forward or rearward) acceleration and lateral (i.e., rightward or leftward) acceleration. (Freeman Report at 10.)

“approximately 0.2 g’s”² and rightward lateral acceleration of “approximately 0.3 g’s.” (*Id.*)

Mr. Morr found that the car then rotated and slid across the roadway, collided with the tractor-trailer one or more additional times, and came to rest in the snowbank on the side of the road. (*Id.*) Mr. Morr opined that the final impact with the snowbank resulted in “primarily rearward-directed longitudinal accelerations at or below those experienced during normal vehicle braking events.” (*Id.*)

Mr. Morr’s biomechanical analysis found that that the “highest magnitude event” was likewise the initial impact, with a “resultant acceleration of less than 0.4 g’s acting forward and to the right.” (*Id.* at 11.) He described that upon initial impact, Plaintiff’s seat assembly moved forward and rightward while Plaintiff’s body remained at its initial position and speed. (*Id.*) In relation to the seat assembly, Plaintiff’s pelvis and lower limbs moved leftward and rearward, but because the accelerations were so low, relative pelvic movement was minimal. (*Id.*) Plaintiff’s torso also moved rearward and leftward, resulting in greater interaction with the seat back. (*Id.*) Plaintiff’s head response lagged that of the torso, continuing rearward and leftward, and may have contacted the head restraint. (*Id.*) Mr. Morr opined that all other movements during the accident involved accelerations of a smaller magnitude. (*Id.*) The final impact with the snowbank resulted in Plaintiff’s body leaning forward “similar to that experienced when bringing a vehicle to a controlled stop in traffic or at a stop sign.” (*Id.*) Ultimately, Mr. Morr concluded that the forces acting on Plaintiff’s body were below applicable “accepted injury thresholds” and were of a magnitude and direction similar to that experienced during “routine daily activities.”³

² Accelerations are typically expressed in terms of a “g.” (Morr Report at 10.) One “g” is equal to the acceleration caused by the Earth’s gravity, which acts on all objects on the Earth at all times. (*Id.*) For example, an object’s weight on Earth is a force equal to the object’s mass multiplied by the acceleration of gravity. (*Id.*)

³ Mr. Morr lists, for example, “walking,” “getting in and out of the [vehicle],” “bending over to pick something off the ground,” “opening doors,” and “lowering oneself to a lying position.” (Morr Report at 11-12.)

(*Id.* at 11-12.) Accordingly, Mr. Morr opined that the forces and accelerations that Plaintiff experienced during the collision were “not consistent with causing injury.” (*Id.* at 12.)

Plaintiff’s expert, Dr. Freeman, issued a rebuttal report dated September 19, 2013 and an addendum dated October 2, 2013. (Freeman Report; Bauer Decl., Ex. I, ECF No. 32-9.) Dr. Freeman reviewed Mr. Morr’s report, photographs of the damage to the vehicle, color photographs of the accident site, the police report, Plaintiff’s deposition testimony, a witness’s deposition testimony, and Plaintiff’s medical records. (Freeman Report; Bauer Decl., Ex. I; Bauer Decl., Ex. J at 13:15-17, ECF No. 32-10 [hereinafter Freeman Dep. Tr.].) Dr. Freeman largely agreed with Mr. Morr’s description of the directional movements of the vehicle and Plaintiff’s body during the initial impact. (*Compare* Morr Report at 9, 11 *with* Freeman Report at 2-6.) But Dr. Freeman opined that Mr. Morr’s analyses were flawed for several reasons. First, Dr. Freeman opined that the precise forces and accelerations acting on Plaintiff’s vehicle throughout the accident were not calculable because numerous variables were unknown.⁴ (Freeman Report at 10.) Nevertheless, the available evidence suggested that the forces were far greater than Mr. Morr’s estimates. (*Id.*) For example, Dr. Freeman pointed out that the B-pillar, a “very stiff” part of Plaintiff’s vehicle, was crushed in the initial impact and that the vehicle was launched a distance of roughly 10 feet. (*Id.*) The lateral acceleration required to achieve such a result would have been at least 3 g’s, and could have been more than 6 g’s (far greater than Mr. Morr’s estimate of 0.3 g’s). (*Id.*) The longitudinal acceleration resulting from the initial impact, in Dr. Freeman’s opinion, was not calculable; Mr. Morr’s estimate of 0.2 g’s was speculative. (*Id.*) Dr. Freeman also opined that upon final impact with the snowbank, Plaintiff’s vehicle probably went from a counterclockwise rotation to a clockwise rotation, which would have

⁴ Dr. Freeman lists examples such as the “length of the radius arm,” the “velocity at which the vehicle is traveling in the rotational plane,” and “how the vehicle is rotating.” (Freeman Dep. Tr. at 55:17-23, 57:7-11.)

caused accelerations on Plaintiff's body 20 to 50 times greater than Mr. Morr's maximum estimate of 0.4 g's. (*Id.*) Dr. Freeman also pointed out that Mr. Morr did not attempt to quantify the forces, accelerations, injury thresholds, or tolerances associated with any part of Plaintiff's body, and ignored the well-established principle that "occupant accelerations are typically substantially greater than vehicle accelerations." (*Id.* at 7, 10-11.) Dr. Freeman also opined that Mr. Morr utilized sideswipe-collision principles that are inapplicable to the instant collision. (*Id.* at 10.) He also challenged Mr. Morr's causation principles, opining that it is scientifically invalid to rebut causation by comparing peak acceleration to generalized injury thresholds, or by comparing accelerations experienced in a collision to those experienced during other activities. (*Id.* at 11-13.) Dr. Freeman further opined that the available evidence favored the collision as the cause of Plaintiff's injuries because of the presence of a mechanism for injury in the collision (i.e., "if [Plaintiff] were holding on to the steering wheel as she stated in her deposition, the collisions would have provided a mechanism for injury to her shoulder as well as her spine"), a temporal connection between the collision and her injuries, and her pre- and post-collision medical history. (*Id.* at 5, 12; Freeman Aff. ¶ 5, ECF No. 38.)

LEGAL STANDARD

The admissibility of expert testimony is governed by Rule 702 of the Federal Rules of Evidence:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if (a) the expert's scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue; (b) the testimony is based on sufficient facts or data; (c) the testimony is the product of reliable principles and methods; and (d) the expert has reliably applied the principles and methods to the facts of the case.

Fed. R. Evid. 702. Following the Supreme Court's ruling in *Daubert*, 509 U.S. at 597, trial courts are to serve as gatekeepers for expert testimony. Specifically, Rule 702 requires a trial

court to make an initial determination as to whether the proposed witness qualifies as an expert.

Baker v. Outfitters, Inc., 254 F. Supp. 2d 346, 352-53 (S.D.N.Y. 2003). If this threshold requirement is met, then a court must inquire into whether the scientific, technical, or other specialized testimony provided by the expert is both relevant and reliable. *Id.*

The Second Circuit follows a liberal interpretation of the qualification requirement.

Mancuso v. Consolidated Edison Co. of N.Y., Inc., 967 F. Supp. 1437, 1442 (S.D.N.Y. 1997). In determining whether a witness is qualified to render an expert opinion, a district court “must first ascertain whether the proffered expert has the educational background or training in a relevant field.” *Cary Oil Co. v. MG Ref. & Mktg., Inc.*, No. 99 CIV. 1725 (VM), 2003 WL 1878246, at *2 (S.D.N.Y. Apr. 11, 2003). Then the court “should further compare the expert’s area of expertise with the particular opinion the expert seeks to offer and permit the expert to testify only if the expert’s particular expertise enables the expert to give an opinion that is capable of assisting the trier of fact.” *Id.* (alterations and internal quotation marks omitted).

In assessing the relevance of proffered expert testimony, a district court looks to Rule 401 of the Federal Rules of Evidence—“i.e., whether it has any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence.” *Amorgianos v. Nat’l R.R. Passenger Corp.*, 303 F.3d 256, 265 (2d Cir. 2002).

In assessing reliability, courts should consider “the indicia of reliability identified in Rule 702, namely, (1) that the testimony is grounded on sufficient facts or data; (2) that the testimony is the product of reliable principles and methods; and (3) that the witness has applied the principles and methods reliably to the facts of the case.” *Id.* To that end, the district court should undertake a “rigorous examination of the facts on which the expert relies, the method by

which the expert draws an opinion from those facts, and how the expert applies the facts and methods to the case at hand.” *Id.* at 267.

ANALYSIS

I. Qualifications

As explained in *Cary Oil*, the initial question relevant to whether Dr. Freeman is qualified is whether Dr. Freeman has sufficient educational background or training in a relevant field. 2003 WL 1878246, at *2. Despite Defendant’s attempt to characterize Dr. Freeman as solely an epidemiologist (see Def.’s Mem. *passim*, ECF No. 31; Def.’s Reply *passim*, ECF No. 34), Dr. Freeman has expertise in the fields of injury biomechanics, accident reconstruction, forensic epidemiology, and medicine. He is an ACTAR-certified accident reconstructionist who has participated in more than 2,000 accident reconstructions. (Freeman Aff. ¶ 6.) His experience has included animal and cadaver testing and live human crash tests. (Freeman Dep. Tr. at 71:14-18.) He frequently performs comparable analyses as an expert in litigation.⁵ (Freeman Aff. ¶ 5.) *E.g., Jimenez v. United States*, No. 5:13-cv-00096, ECF No. 67 (W.D. Tex. July 25, 2014); *Campbell v. Fawber*, 975 F. Supp. 2d 485 (M.D. Pa. 2013). He has consulted on injury biomechanics to state and federal government clients. (Freeman Aff. ¶ 7.) He has authored or co-authored more than 150 publications related to the disciplines at issue (*id.* ¶ 7)—including 37 peer-reviewed publications pertaining to injury biomechanics (*id.* Ex. B) and over 50 pertaining to crash-related spinal injuries (*id.* ¶ 7). He serves as an Associate Editor of the Spine Journal, the Journal of Physical Medicine and Rehabilitation, and the Journal of Forensic Biomechanics, and was the co-editor-in-chief and co-founder of the Journal of Whiplash and Related Disorders from 1999-2006. (*Id.*) As an Affiliate Professor of Epidemiology and Psychiatry at Oregon

⁵ Defendant provides a list of five cases in which Dr. Freeman’s testimony was excluded, all of which are wholly inapposite. (Def.’s Reply at 4-5.)

Health and Science University School of Medicine, he has taught courses in injury biomechanics for 15 years. (*Id.*) His PhD minor from Oregon State University included four graduate-level courses in biomechanics. (*Id.*) His other degrees also bear mentioning—a doctor of medicine, a PhD in Public Health with a major focus in epidemiology, a Master’s in Public Health in epidemiology and biostatistics, a doctor of chiropractic medicine, and a BS in general science. (*Id.*) Defendant emphasizes that Dr. Freeman is not a biomechanical engineer, has no degree or certification in engineering, and has no work experience as any type of engineer. (Def.’s Mem. at 12.) Dr. Freeman readily admits this. (Freeman Dep. Tr. at 17:10-12.) The Court finds that Dr. Freeman is qualified in the areas of injury biomechanics, accident reconstruction, forensic epidemiology, and medicine; the Court likewise finds that Dr. Freeman is not qualified in engineering except to the extent that engineering principles are involved in those disciplines.

The next step is for the Court to compare Dr. Freeman’s expertise with the particular opinions he seeks to offer. *Cary Oil*, 2003 WL 1878246, at *2. Defendant argues that Mr. Morr’s opinions are exclusively the domain of “biomechanical engineering,” such that only another biomechanical engineer may rebut them. (Def.’s Mem. at 10-14.) Plaintiff argues that Mr. Morr’s opinions pertain to accident reconstruction and injury biomechanics, and that Dr. Freeman’s opinions concern those disciplines as well as epidemiology and medicine. (Pl.’s Opp. at 7, ECF No. 37.)

The Court agrees with Plaintiff. Two analyses lie at the core of Mr. Morr’s report: an accident reconstruction and a biomechanical analysis.⁶ Dr. Freeman’s substantial expertise in

⁶ The Court uses the terms “accident reconstruction” and “biomechanical analysis” in conformance with hundreds of cases before it. Although Defendant labels Mr. Morr’s analyses “engineering accident reconstruction” and “biomechanical engineering analysis” (Def.’s Mem. *passim* (emphasis added)), there appears to be no such thing. For example, a Westlaw search across all federal and state cases for the terms “engineering accident reconstruction” or “biomechanical engineering analysis” yields only false hits. Mr. Morr’s analyses do not appear to differ at all from a typical biomechanical analysis or accident reconstruction. One cannot simply add “engineering” to the name of an analysis and inject a prerequisite of engineering expertise.

reconstructing accidents of this type qualifies him to rebut Mr. Morr's accident reconstruction. As to Mr. Morr's biomechanical analysis, the Court looks to the substance of the analysis—rather than the mere fact that Mr. Morr is a biomechanical engineer—to determine whether Dr. Freeman is qualified to offer a rebuttal opinion. Biomechanics is “the science concerned with the action of forces, internal or external, on the living body.” *Biomechanics*, Stedman’s Medical Dictionary (Nov. 2014). Mr. Morr’s biomechanical analysis evaluates Plaintiff’s movements during the accident, including the forces and accelerations exposed to Plaintiff’s body parts at various points throughout the accident. (See Morr Report at 9-12.) Dr. Freeman testified that Mr. Morr’s report expresses no engineering opinions at all (Freeman Aff. ¶ 5), and the Court sees nothing that amounts to an engineering opinion except to the extent that biomechanics and accident reconstruction implicate certain principles of engineering. Mr. Morr’s analysis appears to be typical of biomechanical analyses, such that expertise in biomechanics is sufficient to offer a rebuttal opinion.

Defendant provides no support for its assertion that biomechanical engineering expertise, or other engineering expertise, is required. Defendant’s papers do not explain the difference between biomechanics and biomechanical engineering, nor does Defendant show that Mr. Morr’s analysis differs from a typical biomechanical analysis in a way that uniquely calls for an engineer’s response. Defendant cites cases in which courts have qualified biomechanical engineers to offer expert opinions in automobile accident cases. (Def.’s Mem. at 10-11.) But Defendant cites no case in which a court barred a witness with biomechanics expertise because he or she was not a biomechanical or other engineer. Accordingly, the Court finds that Dr. Freeman’s biomechanics expertise qualifies him to rebut Mr. Morr’s biomechanical analysis.

In addition to rebutting Mr. Morr's opinions in the fields of accident reconstruction and biomechanics, Dr. Freeman offers opinions in the fields of medicine and forensic epidemiology. Dr. Freeman is qualified in all of these fields.

II. Relevance and Reliability

In the interest of judicial economy, the Court will address in detail only those colorable arguments that Defendant's papers advance.

A. Sufficiency of Factual Basis

Defendant argues that Dr. Freeman's opinions are irrelevant and fail to "fit" the facts of the case because he failed to consider the repair estimate and appraisal for Plaintiff's vehicle, exemplar tractor-trailer information, published specifications and testing results for the vehicles involved in the accident, crash-test reports, photographs of the snowbank, snowbank collision data, and Mr. Morr's underlying calculations.⁷ (Def.'s Mem. at 17-18, 21-22.)

An expert's methodology must be "relevant to the task at hand." *Daubert*, 509 U.S. at 592-93. "Evidence is relevant if: (a) it has any tendency to make a fact more or less probable than it would be without the evidence; and (b) the fact is of consequence in determining the action." Fed. R. Evid. 401. The *Daubert* Court described this consideration as one of "fit," requiring a "valid scientific connection" between the subject matter of the expert's testimony and the factual issues to be determined by the jury. *Daubert*, 509 U.S. at 591-92. Although Defendant urges that Dr. Freeman's opinions are irrelevant, Defendant fails to direct its arguments toward the applicable standards. For example, Defendant does not explain why any of the facts that Dr. Freeman disregarded were crucial to the analysis. Nor is there any

⁷ Defendant further contends that Dr. Freeman failed to consider any photographs of the accident site, but Dr. Freeman testified that he did. (Freeman Dep. Tr. at 13:15-17.)

suggestion that the supposedly overlooked materials conflict with Dr. Freeman's opinions or premises, or otherwise render his methodology inapt.

"As a general rule, the factual basis of an expert opinion goes to the credibility of the testimony, not the admissibility, and it is up to the opposing party to examine the factual basis for the opinion in cross-examination." *Hollman v. Taser Int'l Inc.*, 928 F. Supp. 2d 657, 670 (E.D.N.Y. 2013). "Only if the expert's opinion is so fundamentally unsupported that it can offer no assistance to the jury must such testimony be excluded." *Id.* Dr. Freeman relied on Mr. Morr's report, witness deposition testimony, a fairly comprehensive collection of photographs of the damage to the vehicle, the police report, Plaintiff's medical records, and his years of experience performing experiments and other analyses concerning injuries in automobile accidents. *See supra* p. 4. (Freeman Dep. Tr. at 75:19-78:6.) These materials contained the facts relevant to an accident reconstruction, a biomechanical analysis, and an injury causation analysis. Courts in other jurisdictions have admitted accident reconstruction and biomechanics expert testimony based on evidence comparable to what Dr. Freeman relied on here. *See, e.g., Miles v. Gen. Motors. Corp.*, 262 F.3d 720, 724 (8th Cir. 2001) (expert considered a police report, photographs of the scene, plaintiff's medical records, plaintiff's radiology reports, witness statements and depositions, and medical literature); *In re Toyota Motor Corp. Unintended Acceleration Mktg., Sales Practices, & Prods. Liab. Litig.*, 978 F. Supp. 2d 1053, 1069 (C.D. Cal. 2013) (causation and biomechanics expert considered another expert's report, photographs the vehicle, medical records, and a police report); *Chavez v. Marten Transp., Ltd.*, Civ. No. 10-0004, 2012 WL 988011 (D.N.M. Mar. 22, 2012) (accident reconstruction and biomechanics expert considered deposition testimony, a police report, plaintiff's medical records, plaintiff's worker's compensation complaint, and the parties' expert reports); *Paine v. Johnson*, No. 06C

3173, 2010 WL 749857 (N.D. Ill. Feb. 25, 2010) (accident reconstruction expert considered a police report and photographs of the vehicle damage and accident site); *Cabassa-Rivera*, 2006 WL 6870560, at *9-10 (causation expert considered four photographs of the vehicle, an autopsy report, and a police report). The Court finds that Dr. Freeman's methodology "fits" the facts of the case and that his proffered testimony makes injury causation more probable. Therefore his testimony is relevant.

B. Opinions Concerning the Snowbank Impact

Defendant further takes issue with Dr. Freeman's opinion that upon final impact with the snowbank, Plaintiff's body experienced accelerations 20 to 50 times greater than Mr. Morr's vehicle acceleration estimate of 0.4 g's. (Def.'s Mem. at 21.) Defendant argues that Dr. Freeman's methodology on this point is unreliable because he did not review snowbank collision data or a photograph of the snowbank. (*Id.*) However, Defendant fails to explain why these materials are crucial, how they would have changed the analysis, or why the absence of such data undermines Dr. Freeman's methodology.

To arrive at his opinion with respect to the snowbank impact, Dr. Freeman relied on photographs of the vehicle damage, his accident reconstruction (specifically, the fact that the vehicle would have gone from a counterclockwise rotation to a clockwise rotation upon impact with the snowbank), the principle that occupant accelerations are typically substantially greater than vehicle accelerations, the fact that Mr. Morr's estimate of 0.4 g's of vehicle acceleration is less than the force associated with normal braking events, and human crash-test results published in Lawrence S. Nordhoff Jr., Michael D. Freeman & Gunter P. Siegmund, *Human Subject Crash Testing: Innovations and Advances* (SAE Int'l 2007), showing that that a five mile-per-hour crash can produce 17 to 20 g's at an occupant's head. (See Freeman Dep. Tr. at 75:19-78:6.)

Accordingly, the principles Dr. Freeman applied are tested, published, or generally accepted, and appear to have been applied reliably. Defendant may raise Dr. Freeman's failure to also consider other crash-test data or photographs on cross-examination, but it will not operate to bar his testimony.

C. Opinions Concerning the B-Pillar Damage

Similarly, Defendant argues that Dr. Freeman's assessment of the initial impact, including the damage to the B-pillar, was unreliable because he did not review crash-test data, published vehicle specifications, and other information about B-pillar stiffness.⁸ (Def.'s Mem. at 22.) Again, Defendant makes no effort to explain how these data would have affected the analysis or conclusions, if at all, or why they are otherwise essential from a scientific perspective.

Dr. Freeman relied on photographs to determine the extent of B-pillar crush, testimony and photographs to establish that the vehicle was launched roughly ten feet from the tractor-trailer, and a standard coefficient of friction between 0.3 and 0.55 to account for the road conditions. (Freeman Report at 10; Freeman Dep. Tr. at 50:4-53:18.) He estimated that given the crush, friction, and distance traveled, the impact must have generated lateral vehicle accelerations of at least 3 g's, or possibly more than 6 g's (and far greater occupant accelerations). (Freeman Report at 10; Freeman Dep. Tr. at 50:4-53:18.) In addition, Dr. Freeman cited an article published in a peer-reviewed, scientific journal to establish that the sideswipe-collision principles that Mr. Morr applied were inappropriate here because of the

⁸ Defendant also complains that there "are no facts in the record which [sic] support Dr. Freeman's allegation that the B-pillar on plaintiff's vehicle was deformed in the accident at issue." (Def.'s Mem at 23.) This is obviously untrue. This fact is supported by Plaintiff's and the witness's testimony concerning the collision and the photographs of damage to the vehicle. And even if there were no evidence, "[c]oncerns over specific facts . . . are questions of fact for the jury." *Jimenez*, No. 5:13-cv-00096, ECF No. 67, at *5. "The use of facts that are not supported by [other evidence] goes to the weight of Dr. Freeman's testimony, not the admissibility." *Id.*

degree of crush, snagging, and rotation evident in the accident. (Freeman Report at 10.) *See* Amrit Toor et al., *Practical Analysis Technique for Quantifying Sideswipe Collisions*, Soc'y Auto. Eng'rs., Tech. Paper No. 1999-01-0094 (1999). Defendant does not challenge any of these principles. Plaintiff has met its burden of showing that Dr. Freeman applied standard accident reconstruction principles, standard friction estimates, and published research to arrive at his opinions. While it is true that he did not look up the stiffness value of Plaintiff's B-pillar, Dr. Freeman testified that he would need to do so only if he sought to calculate the energy for this particular crash (Freeman Dep. Tr. at 50:4-14), which is not part of the basis for Dr. Freeman's opinions. *Cf. Berry v. Transp. Distrib. Co.*, No. 12-CV-488-JED-FHM, 2013 WL 6271605, at *2 (N.D. Okla. Dec. 4, 2013) (finding that defendants had "made no showing that a biomechanical expert's opinions [were] not sufficiently reliable in the absence of . . . calculations regarding vehicle stiffness"). Therefore this omission will not operate to bar his testimony.

D. Partial Accident Reconstruction

Defendant next argues that Dr. Freeman's methodology is unreliable because he did not calculate the energy of the crash, the coefficient of friction, the change in speed of the vehicle, the center of gravity of the vehicle, or the forces at work on the vehicle and Plaintiff's body. (Def.'s Mem. at 23.) Dr. Freeman testified that he did calculate the coefficient of friction, the change in speed of the vehicle, and the lateral acceleration of the vehicle in the initial impact (Freeman Dep. Tr. at 53:11-18); that it was completely unnecessary to calculate the center of gravity or the energy of the crash (*id.* at 54:7-15); that the initial longitudinal accelerations and other forces acting on the vehicle were impossible to calculate because of unknown variables (Freeman Report at 10); and that neither he nor Mr. Morr calculated the magnitude of the forces acting on Plaintiff's body parts because such calculations were likewise impossible (*id.* at 10-11;

Freeman Dep. Tr. at 55:5-23). Indeed, one of Dr. Freeman's central criticisms was that Mr. Morr made unsupported assumptions to enable him to perform certain of these calculations. (Freeman Report at 8, 10-12; Freeman Dep. Tr. at 57:9-11 ("It's not better to make stuff up than it is to just say 'I don't know.'").)

As explained above, the principles applied by Dr. Freeman are standard, accepted accident reconstruction and biomechanics principles, and his opinions have sufficient basis in fact. With ideal record evidence, a court might demand that an expert calculate certain variables with precision before admitting testimony; however, partial accident reconstruction analyses have been admitted where, as here, the available evidence is limited. *E.g., Cabassa-Rivera*, 2006 WL 6870560, at *6-7. The Court is mindful that Dr. Freeman is rebutting Mr. Morr's opinions, and logically need not offer a full accident reconstruction or biomechanical analysis to do so. *Cf. Rivas v. Preston*, No. CIV. SA-11-CA-0193, 2012 WL 7782960, at *5 (W.D. Tex. Feb. 29, 2012) (permitting rebuttal testimony focusing on mechanical engineering issues raised by another expert's report even though the rebuttal expert "did not reconstruct the accident; he did not calculate the speeds of the tractor trailer during the course of this accident; he did not calculate the speeds of the Ford Escape during the course of this accident; he did not calculate any speeds relative to each of the two vehicles; he did not calculate the principal direction of force involved in this accident; he did not calculate the closing speed between the tractor trailer and the Ford Escape; he did not calculate where the area of impact began; he did not calculate any Delta-v or change in velocity for either vehicle; he did not calculate any impact velocities on either vehicle; he did not examine interior photos of the vehicle and thus, had not determined from any photographs whether there were any witness marks, load marks, et cetera, on the Ford Escape; he did not calculate the speed of lateral movement of the tractor trailer; he did not

calculate the speed of the lateral movement of the Ford Escape; he did not calculate the angle of impact between the two vehicles; he did not calculate any type of force that was exerted upon plaintiff's body; he did not calculate the impact force between the two vehicles; and that he did not calculate the impact duration"). The Court finds that Dr. Freeman's opinions are well-supported and his methodology reliable despite his failure to calculate the values identified by Defendant.

E. Opinions Concerning Causation

Finally, Defendant takes issue with Dr. Freeman's causation principles and his criticism of Mr. Morr's causation principles. (Def.'s Mem. at 19-20.) Mr. Morr opines that the collision did not cause Plaintiff's injuries because his biomechanical analysis revealed that the forces acting on Plaintiff's body were below injury thresholds and comparable to those experienced during "routine daily activities." (Morr Report at 11-12.) Dr. Freeman cites two peer-reviewed articles that explain that biomechanical analysis is unreliable when used as the sole basis to refute that a collision caused an injury, as opposed to explaining how an injury occurred or choosing between two potential mechanisms for injury in a collision. (Freeman Report at 8-9, 12-13.) Rather, the articles advocate for the use of biomechanical analysis to augment a forensic epidemiological causation analysis, which is what Dr. Freeman has done in his report. *See Michael D. Freeman et al., An Evaluation of Applied Biomechanics as an Adjunct to Systematic Specific Causation in Forensic Medicine*, 161 Wien Med. Wochenschr 458, 458-59 (2011).

Accordingly, Dr. Freeman's causation principles and his opinion criticizing Mr. Morr's causation principles are amply supported by published, peer-reviewed, scientific research. *See Morgan v. Girgis*, No. 07 CIV. 1960 (WCC), 2008 WL 2115250, at *4 (S.D.N.Y. May 16, 2008) (finding an expert's methodology reliable where the "list of academic and scholarly sources [the expert]

has drawn on—as well as those he has authored—indicates that the theories and principles involved in his analysis have been the subject of extensive peer review and testing”).

* * *

The Court finds that Dr. Freeman’s scientific and/or specialized expertise would be helpful to the trier of fact because his testimony is relevant to causation, an issue that is complex, scientific, and technical. The Court finds that the photographs, testimony, reports, and records that Dr. Freeman considered, coupled with his years of knowledge and experience in the relevant fields, constitute “sufficient facts or data,” and that the principles underlying his analysis are reliable and reliably applied. The Court finds Defendant’s remaining arguments unpersuasive.⁹

⁹ The Court will briefly dispose of some of these arguments by footnote. Defendant argues that Dr. Freeman could not have properly rebutted Mr. Morr’s opinions without reviewing Mr. Morr’s underlying calculations. (Def.’s Mem. at 17-18.) This is nonsensical because Dr. Freeman does not opine that Mr. Morr misapplied a formula or made a calculation error. Insofar as Dr. Freeman’s assessment is inconsistent with Mr. Morr’s opinions, it is unnecessary for Dr. Freeman to also parse Mr. Morr’s calculations in order to rebut his opinions. Defendant is free to raise this perceived shortcoming on cross-examination, but it will not operate to bar Dr. Freeman’s testimony. Defendant’s related claim that Dr. Freeman provides no “alternative analysis, calculation or conclusion to rebut Morr’s report” (*id.* at 19) is obviously untrue.

Defendant also argues that Dr. Freeman erroneously claims that Mr. Morr failed to incorporate B-pillar stiffness into his analysis. (*Id.* at 22.) A minor factual error that is largely irrelevant to the ultimate opinion does not render an expert’s testimony inadmissible.

Defendant also argues that Dr. Freeman failed to address a “stark factual discrep[an]cy”—i.e., that Plaintiff’s testimony that she was traveling eastbound is inconsistent with the police report depicting the vehicles traveling westbound. (*Id.* at 20.) But Defendant ignores that Dr. Freeman’s report expressly acknowledged the error in the police report, and even so, Defendant has roundly failed to explain the relevance. It appears to be a complete red herring.

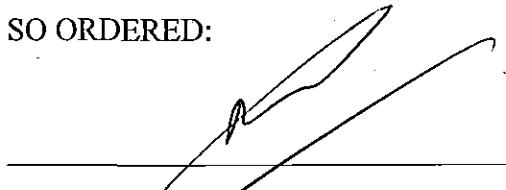
Similarly, Defendant’s claim that Dr. Freeman’s analysis is solely an epidemiological one does not withstand scrutiny. (*Id.* at 23-24.) It is clear from his report that forensic epidemiology is but one of several areas of expertise that Dr. Freeman brings to bear, including injury biomechanics and accident reconstruction.

CONCLUSION

For the foregoing reasons, Defendant's motion *in limine* is DENIED. The Court respectfully directs the Clerk to terminate the motion at ECF No. 30. A pretrial conference is scheduled for March 18, 2015 at 11:00 a.m.

Dated: February 6, 2015
White Plains, New York

SO ORDERED:


NELSON S. ROMÁN
United States District Judge